



MARSHALL STAR

Serving the Marshall Space Flight Center Community

May 11, 2006

At Marshall

Scaled-down solid rocket motor successfully tested May 4



A static — or stationary — firing of a scaled-down version of the space shuttle's Reusable Solid Rocket Motor occurred May 4 at the Marshall Center.

The Marshall Center successfully tested a scaled-down version of the space shuttle's reusable solid rocket motor May 4 at the Marshall Center's East Test Stand area.

The 28-second static test firing of the modified NASA motor is part of an ongoing process to verify components, materials and manufacturing processes required by the space shuttle's Solid Rocket Motor Project Office and the Space Shuttle Program. Preliminary test results indicate all test objectives were met.

The test was conducted by engineers from Marshall's Engineering Directorate, ATK's Science and Engineering Huntsville Operations group and the Shuttle Reusable Solid Rocket Motor Project Office. ATK Launch Systems, an Alliant Techsystems Inc. group, of Promontory, Utah, manufactures the shuttle's solid rocket motor.

Final test results are expected by August, and the data will be analyzed to better understand the motor's performance. Test results will be used to evaluate the performance of a new internal insulation material that will be used in the aft dome of the motor. Results also will allow engineers to assess potential instrumentation including one that offers a sharper chemical "map" of the motor's plume during launch and provide more information on the temperature of the nozzle's phenolics — resin-impregnated fiber reinforced material cured under heat and pressure.

The test motor is deemed one-sixth scale, based on its 9-inch nozzle throat diameter versus the full scale motor's 54-inch diameter nozzle throat. The duration of the test was approximately one-fourth the amount of time that motors perform during shuttle flights.

Merlin Bone

Marshall captures image of disintegrating comet over Alabama

By Lori Meggs

Marshall Center astronomers snapped an image of the 73P/Schwassmann-Wachmann 3 — the 73rd recognized periodic comet in our solar system — as it passed close to Earth

on April 27. Rob Suggs, an astronomer in Marshall's Meteoroid Environment Office, took the photo from atop the Lunar Observatory tower in Building 4347.

Discovered in 1930, the comet comes

nearest to the Earth every five years. In 1995, the comet began to disintegrate, and as of March 2006, at least 40 different

See Comet on page 4

King shares vision during annual Director's Breakfast



Marshall Center Director David King hosted the annual Director's Breakfast on May 3, at the Huntsville Marriott. More than 200 elected officials, civic and industry leaders from across North Alabama attended the event. The annual event gives King the opportunity to discuss Marshall's achievements, current programs and future initiatives. Marshall Deputy Director Charles Chitwood presented Contractor Excellence Awards. For more details, read "Marshall honors 2005 Contractor Excellence Award winners" on page 8.

Marshall to support regional schools in partnership

NASA announces new Explorer Schools

From a Headquarters news release

In a press conference May 5, NASA welcomed 26 new NASA Explorer Schools. The program is a partnership to inspire students in science, technology, engineering and mathematics.

NASA Explorer Schools provide unique opportunities designed to engage and educate the future scientists who may someday help advance U.S. scientific interests through space exploration.

New schools participating in the NASA Explorer Schools program include Tanner High School in Tanner, Ala.; Tuskegee Public Elementary School in Tuskegee, Ala.; and three schools in the Texarkana, Ark., school district.

These schools will be supported by the Marshall Center. In the coming school year, representatives from Marshall will visit each school to help kick-off the program with a special student assembly.

The assemblies will help excite students about learning math and science — the foundation for a career in the space industry — and encourage them to become the next generation of

explorers taking NASA back to the moon, Mars and beyond.

Part of NASA's elementary and secondary programs, the schools look to attract and retain students in science and technical fields through a progression of educational opportunities for students, teachers and administrators. NASA's 150 Explorer Schools' teams, which primarily come from minority and under-represented communities, represent all 50 states, the District of Columbia and Puerto Rico.

Selected schools are eligible to receive up to \$17,500 during the three-year partnership to help buy technology tools. The program also provides educators and students with content-specific activities that can be used in many local and state curricula to excite students about science and math.

The NASA Explorer Schools program was chosen as one of the "Top Innovations in American Government Awards for 2006" by the Ash Institute for Democratic Governance and Innovation at Harvard University, Cambridge, Mass.

For more information about the NASA Explorer Schools, visit <http://www.explorerschools.nasa.gov/portal/site/nas>.

Office of Chief Information Officer keeps NASA, Marshall moving along technology highway

By Jonathan Baggs

Some historians will argue that the great moon rockets of the 1960s were built with brain power, a No. 2 pencil and a slide rule.

Now, powerful desktop computers, wireless communications and digital libraries serve Marshall engineers and scientists building the next generation of spacecraft.

Modern information technology is what separates today's generation of Marshall employees from those of 40 years ago. And it's the Office of the Chief Information Officer that supplies it.

From handheld wireless devices to business cards, the office also provides desktop computers used for everyday office productivity to high-performance engineering systems, audio-visual tools for animations and simulations, mobile communication technology — voice, data and e-mail, imaging and reproduction services, proposal creation, technical editing and many other services to help Marshall and NASA extend its reach into

space. The office's role is to be the single point of accountability for providing information technology services, including broad categories of security, planning, policy development, governance, compliance and other responsibilities.

"We are ultimately responsible and accountable for maintaining information technology services and infrastructure at the Marshall Center," said Burt Bright, IT integration manager and Marshall's team lead for Desktop Services.

That responsibility goes beyond supplying the latest hardware and software to the Marshall workforce. The office also is responsible for the NASA Data Center — essentially a large room of computers housed in a Marshall building. The data center provides server applications used for computational analysis and data storage for the entire agency.

As part of a technology awareness campaign initiative, the office

recently showcased its latest products and services for Marshall employees in Building 4316. Bright was constantly in motion, explaining the latest technologies that help users save time and more efficiently manage tasks.

"With upcoming new projects like the Crew Launch Vehicle, Cargo Launch Vehicle and Robotic Lunar Exploration, it is essential that the Marshall workforce is aware of, and understands, the information technology available for their use from the Office of the Chief Information Officer," Bright said.

The event also helped chief information officer representatives

interact with the Marshall team to better understand workforce technology requirements. Staying ahead of the technology curve is tough, according to Bright.

"The challenge we face is being able to provide the technology when the user needs it," he said. "Product development moves so quickly that when a new product is announced, it's on the street a week later. It leaves very little time for us to test new technologies."

A recent example, Bright said, is when a computer manufacturer announced a new model. It was asked for almost immediately by a Marshall manager working on next-generation spacecraft. "The situation was he needed this computer for his team to test an application and we had to make sure it would work to accomplish their tasks," Bright recalled.

While providing the latest technology, the office also maintains the Documentation Repository in Building 4491. Designated by NASA as the centralized facility for the receipt, storage, management and distribution of technical documentation, the repository has more than 800,000 engineering drawings, technical reports, specifications and standards, manuals, program schedules and other technical documents in support of Marshall programs and projects. And it's all available upon request.



Burt Bright, center, Marshall's IT integration manager and team lead for Desktop Services, explains how the Office of the Chief Information Officer can supply a variety of high-tech solutions to help Marshall team members work more efficiently.

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Marshall Director King shares insight during his commencement address at the University of South Carolina Sumter

By Jessica Wallace

Marshall Center Director David King, in a commencement address at his alma mater May 3, told the new graduates of the University of South Carolina Sumter why it's important to find their passion.

King challenged graduates to find their passion professionally and personally, be teachable and mentor others.

Following the speech, University of South Carolina President Andrew Sorensen presented a full-tuition Commencement Speaker Scholarship to Brentney Elmore of Sumter, with this year's award honoring King. Elmore will receive the \$4,324 per-academic-year scholarship. Elmore will begin her studies in the fall.

To qualify for the scholarship, a student must possess exceptional potential and outstanding academic performance.

King attended the University of South Carolina Sumter for two years before concluding his studies at the University of South Carolina Columbia, where he earned his bachelor's degree in mechanical engineering in 1983. In 2000, King was honored by the University of South Carolina with its Outstanding "Young Alumnus" award, presented annually to recognize outstanding graduates of the university.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.



Marshall Center Director David King, left, with University of South Carolina Sumter Dean Dr. Les Carpenter.

Comet

Continued from page 1

fragments of the comet are known to be flying through the solar system.

Astronomers will be watching the bright comet fragments to calculate their various trajectories for future years.

The fragments can be seen in North Alabama low in the northeastern sky beginning around 11:30 p.m. CDT, Friday, May 12, with the best viewing at 4 a.m., Saturday, May 13, in the eastern sky.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.



Rob Sugge/MSFC

73P/Schwassmann-Wachmann 3

Student teams launch rockets and take home awards

Marshall Center sponsored Student Launch Initiative, held May 4-6

By Bill Hubscher

The skies over the Tennessee Valley were filled with smoke and fire last weekend when the Marshall Center hosted 11 high school rocket teams from across the country as part of the annual NASA Student Launch Initiative.

The educational program, now in its sixth year, encourages young people to test their math and science skills in practical, real-world situations. Each team is challenged to design, build and test a rocket; prepare a scientific payload to ride on board; post a Web site of their own design that showcases their work; and present formal project reviews to a panel of NASA engineers.

The 2005-2006 Student Launch Initiative culminated May 4-6 in special events sponsored by the Marshall Center. The events began Thursday, May 4, when teams brought their rockets to Morris Auditorium in Building 4200 for a short presentation to NASA employees. Students from each team explained how their rocket would work and described the nature and value of the scientific payload it would carry.

"When we started, the thought of giving presentations to NASA was really intimidating," said Jacinth Sohi, a junior member of the Madison West High School rocket team from Madison, Wis. "But the NASA engineers we talked to and worked with over the course of the year were all very supportive. They made us feel comfortable about what we were building. I hope I can provide that support as a scientist to students who come to this event in the future."

Students spent Friday touring Marshall and the U.S. Space & Rocket Center. They visited the Propulsion Research Laboratory, the test stands where full-sized engines for the space shuttle and the Apollo-era Saturn V rockets were fired, and the Payload Operations Center where NASA employees stay in constant communication with the

crew of the International Space Station, performing scientific experiments in orbit.

Anticipation and excitement ran high Saturday morning as teams made their way to the open fields of the Mid Tenn Turf, Inc. sod farm in Manchester, Tenn., where they finally let their rockets soar.

NASA awarded the University School of Milwaukee rocket team the Rocket Fair plaque for its presentation to Marshall employees.



A rocket designed and built by the student team from Edison High School in Fresno, Calif., shoots into the skies above Manchester, Tenn., during the Student Launch Initiative event Saturday.

The rocket built by the Milwaukee school also earned the Altitude Award for reaching the highest altitude during flight. The team's rocket, "Papa Smurf," soared to a height of just over one mile. The trophy for Best Web Site Design went to the students from Oakton High School of Vienna, Va. Their dynamic Web site, posted at www.ohsrocketry.org, includes photos of tests, a full explanation of their scientific payload and even a blueprint of their rocket. Madison West High School's rocket team from Madison, Wis., won the trophy for Best Payload Design. Team members built a rocket carrying a plant, *Arabidopsis thaliana*, to test the organism's reaction to the stress

and gravitational forces experienced during launch.

"All the teams that brought their rockets to the Student Launch Initiative should be proud of what they've accomplished," said Jim Ellis, manager of the Marshall Center's Academic Affairs Office. "They faced the same challenges NASA engineers face every day: designing, building and launching a space exploration vehicle, conducting experiments during flight, and reporting the results of both the rocket and the science. These students are laying the groundwork for successful careers in the aerospace industry, and could even be part of the team to get us back to the moon, on to Mars and to destinations beyond."

The experience has already changed the future for one student. Joe Kubiak, a senior at Oakton High School in Vienna, Va., and captain of his rocket team, planned a career in dentistry before he got involved with rockets last summer.

"I thought it might be fun to try when I saw friends who were so passionate about it," Kubiak said. "Then I got excited about it, too. I learned about leadership while guiding my team. I also learned about engineering while designing our rocket and our scientific payload. Plus, there was this sense of accomplishment, not just when we launched our rocket, but in the problems we had to overcome to get here. It was a great experience." Joe starts work on a degree in electrical engineering at the University of Virginia in Charlottesville in the fall.

Other teams recognized for their outstanding work in developing and launching their rockets were from Edison High School in Fresno, Calif.; Laguna Creek High School in Elk Grove, Calif.; Lakewood High School in Lakewood, Colo.; Plantation High School in Plantation, Fla.; Munfordville Elementary in Munfordville, Ky.; Caro High School in Caro, Mich.; and Southfield High School in Southfield, Mich.

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This is not your parents' spaceship

Marshall guides NASA's development of flagship Crew Launch Vehicle

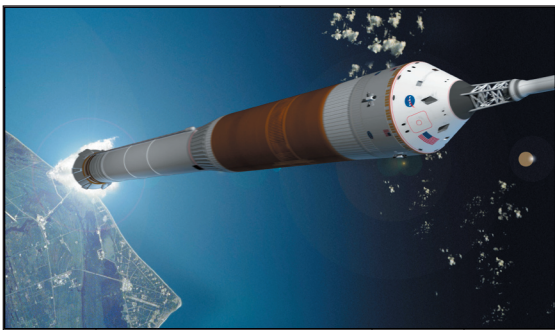
By Rick Smith

NASA engineers at the Marshall Center and around the nation are evolving hardware and building on proven flight technologies to develop America's Crew Launch Vehicle — the cutting-edge flagship that will carry explorers to space.

It may resemble its forebears — the powerful space shuttle boosters, the Apollo-era-inspired "vertical-stack" configuration — but make no mistake.

This is not your parents' spaceship.

"The right solution for the next generation of launch vehicles combines today's unparalleled NASA innovation with decades of proven



An artist's rendering of the Crew Launch Vehicle, now in development by NASA engineers and technologists around the nation.

power and efficiency from our most successful legacy launch systems," said Steve Cook, director of the Exploration

Launch Projects Office at Marshall. His office manages development of the crew and cargo launch vehicles for NASA.

"This approach will help meet our timetable to put humans on the moon by 2020, and enable us to achieve unprecedented long-term mission goals — including permanent lunar stations and human expeditions to Mars and beyond," Cook said. "We truly are ushering in a new era in human spaceflight."

The vehicle is an in-line, two-stage rocket configuration built to carry to space the Crew Exploration Vehicle — the capsule that includes the crew compartment and integrated launch abort system designed for improved safety. NASA estimates the vehicle will be 10 times safer than the space shuttle.

The total payload capacity of

An artist's rendering of the Crew Launch Vehicle upper stage, here docking with the lunar surface access module to carry its human crew to the moon.

the Crew Launch Vehicle is 25 metric tons. It will weigh more than 900 tons on the launch pad and stand a little over 300 feet tall.

The recoverable first stage is a single solid rocket booster powered by a reusable solid rocket motor — both derived from current elements that help power the shuttle to orbit. The first stage will incorporate numerous enhancements, including advanced recovery and roll control systems, designed for greater vehicle steering and maneuverability during flight.

The upper stage — a wholly new element being designed at Marshall — will be propelled by a J-2X main engine fueled with liquid oxygen and liquid hydrogen. The J-2X represents an evolution of two historic predecessors: the powerful J-2 upper-stage engine that propelled the Apollo-era Saturn 1B and Saturn V rockets to the moon, and the J-2S, a simplified version of the J-2 flight-tested in the early 1970s.

"Marshall's work on the Crew Launch Vehicle hardware and propulsion elements and overall stack integration is essential to the achievement of NASA's exploration mission goals," Cook said. "Every component of the rocket must be properly developed and integrated to achieve mission goals."

The primary mission of the Crew Launch Vehicle is carrying crews of four to six astronauts to Earth orbit in the Crew Exploration Vehicle. It also may be used to deliver resources and supplies to the International Space Station.

The first lunar excursion is scheduled for 2020.

For more about the Crew Launch Vehicle and NASA's exploration initiatives, visit http://www.nasa.gov/mission_pages/exploration/main.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.



NASA/John Frassanito and Associates

High wire act

Advanced materials engineer at Marshall testing innovative tether technology

Editor's Note: This is the first in a Marshall Star series about key projects now in development by the Advanced Materials for Exploration Activity, part of the Marshall Center's Science and Mission Systems Office.

By Rick Smith

Marshall materials engineer Dr. Richard Grugel is preparing a high wire act that would put some circuses to shame — because the technology he's studying is designed not for aerial feats, but for orbital ones.

The Advanced Materials for Exploration Activity, part of Marshall's Science and Mission Systems Office, is developing and testing new alloys from which to fabricate high-strength wire. This wire would be used in the harsh environment of space — a technology that could support a variety of next-generation space hardware and science missions.

Grugel, principal investigator for the research, initiated study of the materials in 2004. Studying high-strength, steel wire-cord and fabrication techniques used for tire manufacturing, he theorized that a similar approach — using novel titanium and zirconium metal alloys with similar microstructures — could deliver durable, high-strength wire for spacecraft hardware.

Such technology, Grugel said, could be applied to umbilical tethers linking spacewalking astronauts to their craft. It also could be used to construct lightweight connectors for gauzy, billowing "solar sail" space probes pushed at high speeds through the solar system by sunlight itself.

In contrast to steel, these alloy wires are lighter and less likely to suffer from corrosion and temperature extremes that may induce failure. They'll also withstand sustained radiation exposure, and endure a chance-

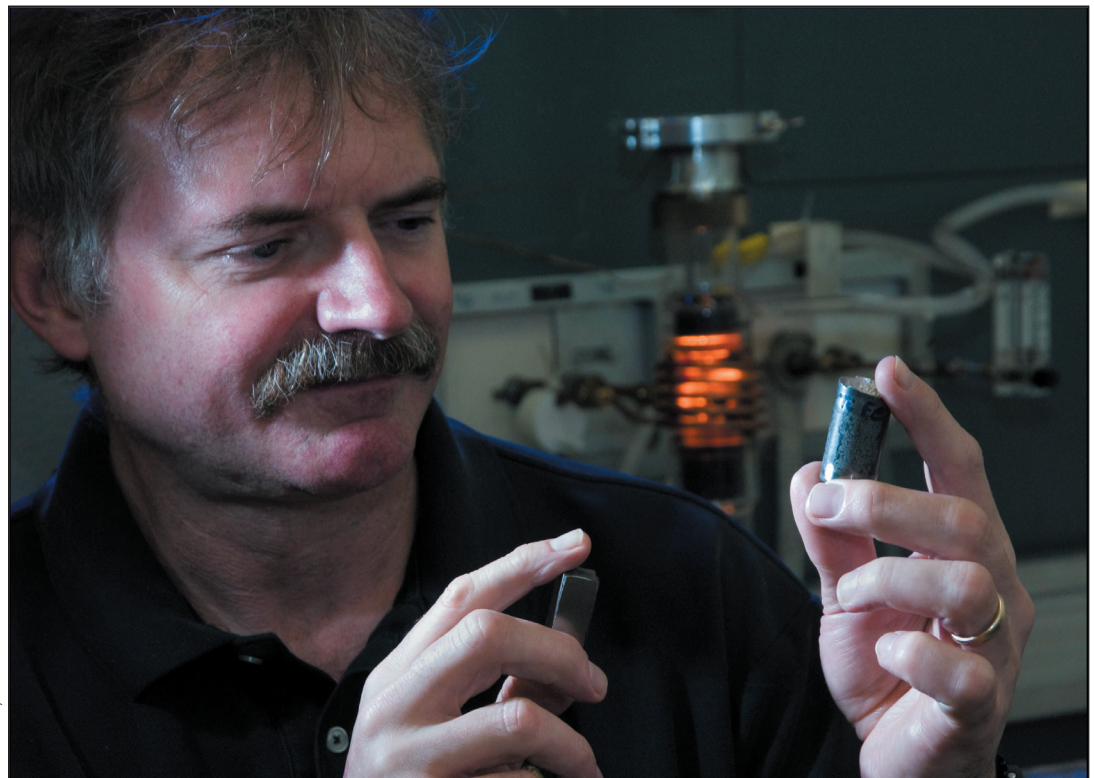
pelting from a micrometeoroid shower.

"Wire has a long history. It's been referred to as 'the product of 150,000 uses,'" Grugel said. "What we're doing is nuts-and-bolts metallurgical engineering, taking a proven process and a proven product and adapting those technologies to a new set of alloys. We hope to improve their material properties and deliver a product that's not just useful to NASA, but perhaps to commercial industry as well."

Grugel's 2004 research fabricated novel titanium and zirconium alloys specifically intended for wire applications in space. To make the alloys, Grugel heats base metals to more than 3,600 degrees Fahrenheit. The alloy is then reheated to about 1,800 degrees Fahrenheit, and allowed to cool slowly. This process creates a eutectoid microstructure, consisting of alternating sheets of different compositions, which contributes to the material's strength. The spacing between these sheets often is fine enough to break up light rays, giving the material a pearlescent appearance. Hence its name: "pearlite."

In April, Grugel began an alloy-development test series at Marshall, in a materials property laboratory in Building 4481, to investigate microstructural development and prepare samples for mechanical testing. Alloying the metals at high temperatures is facilitated by senior engineering technician Curtis Bahr, a Marshall contractor with Qualis Corporation of Huntsville. Bahr designed the equipment and documents all procedures and results. He and Grugel will compare the alloys' mechanical properties to known commercial

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Emmett Given/MSFC

Marshall Center materials engineer Dr. Richard Grugel examines a new, high-strength metal alloy he developed to fabricate wire for use in the space environment — part of the Advanced Materials for Exploration Activity underway in Marshall's Science and Mission Systems Office.

Marshall honors 2005 Contractor Excellence Award winners

By Rita Roberts

Thousands of contractors work each day at the Marshall Center to help support NASA's mission of space exploration. Marshall Center Director David King has recognized three contractor companies with 2005 Contractor Excellence Awards.

Selected for significant contributions to Marshall's mission, the three top contractor companies — ATK Launch Systems of Brigham City, Utah; Teledyne Brown Engineering Inc., of Huntsville; and Morgan Research of Huntsville, a division of Stanley Associates Inc. of Arlington, Va. — were evaluated against six basic criteria. The applications were rated for contract technical performance, schedule and cost performance, leadership and quality improvements, customer satisfaction and innovative technology breakthroughs.

"Our contractor partners have made significant contributions to the mission of the Marshall Center," said Roy Malone, acting director of Marshall's Safety and Mission Assurance Directorate. "These winners, along with all NASA contractors, are a key part of helping continue the Vision for Space Exploration — completion of the International Space Station and exploration of the moon, Mars and destinations beyond. I am pleased we are recognizing the efforts of these dedicated Marshall team members."

ATK Launch Systems was honored in the "Large Business — Product" category. The company has teamed with NASA and the Marshall Center since the beginning of the Space Shuttle Program, providing the reusable solid rocket motor and helping Marshall engineer America's future in space. Over the past five years ATK Launch Systems has helped improve operations and expand knowledge and learning initiatives at Marshall.

Teledyne Brown Engineering was honored in the "Large Business — Service" category. As part of the NASA team, Teledyne Brown Engineering has supported Marshall's payload operations integration for the space station, as well as operation and maintenance of high pressure gas generation and distribution systems, and has provided engineering services, flight and ground hardware development, and operations support activities. The company's commitment to safety and quality assurance, and attention to detail and cost-efficiency has helped realize cost savings without exceeding contract ceilings.

Morgan Research received the "Small Business — Service" category award. The company provides operations support for the Space Shuttle Program and the space station, and information technology support for Marshall's Engineering Directorate. Morgan's dedication to quality engineering, information technology and operations services has improved the center's performance and delivery of products and services, and enhanced Marshall's capabilities to take hardware from preliminary design to operation in space.

Teledyne Brown Engineering also will be submitted as one of the center's 2006 nominees for the NASA George M. Low Award, the agency's most prestigious award for quality and performance in the aerospace industry presented in early 2007.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.



From left, Marty Runkle, Teledyne Brown Engineering vice president of Systems Group; David King, Marshall Center director; and Jim Link, Teledyne Brown Engineering president.



King and Ron Dittmore, ATK Launch Systems.



King and David Provancha, Morgan Research director of NASA programs.

Marshall signs Space Act Agreements with industry partners

Will evaluate the use of NASA Nanocode technology

By Lori Meggs

The Marshall Center's Engineering Directorate has signed NASA Space Act Agreements with three industry partners that will evaluate the use of NASA Nanocode technology, or chemical bar codes.

The technology represents a new way to identify and track solid and liquid propellants, along with parts that cannot be marked any other way.

Marshall's Technology Transfer Program is working with Carpet and Rug Institute of Dalton, Ga., Chemco in Dalton and KeyMaster in Kennewick, Wash., to consider Nanocodes for direct part marking of NASA flight hardware in the Crew Launch Vehicle Program.

Nanocodes also will be evaluated in analyzing dust and contaminant behaviors in habitat flooring systems on Earth. What researchers learn may be applied to future lunar habitats and space transportation vehicles.

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Signing the agreements at the May 3 ceremony are from left, Werner Braun, president of the Carpet and Rug Institute of Dalton, Ga.; Lloyd Starks president of Chemco in Dalton; Dr. Robert Shannon, a representative of KeyMaster in Kennewick, Wash.; and Michael Rudolphi, director of Marshall's Engineering Directorate.

Obituaries

William Preston Horton, 80, of Huntsville died April 22. He retired from the Marshall Center in 1985 as chief engineer for solid rocket booster integration. He is survived by two daughters, Robin Horton Jennings of Huntsville and Pauline Elizabeth Horton of Atlanta.

Orvel E. "O.E." Smith, 79, of Huntsville died April 7. He was a charter member of the Marshall Center and retired in 1984 as an aerospace engineer. He is survived by his wife, Frances Marie Smith; three sons, Greg Smith of St. Joseph, Mich., Mark Smith of Huntsville and Jonathan Smith of Madison; two daughters,

Diana Morrison of Birmingham and Rhonda Robb of Seattle; and one brother, Hanford Smith of Vinemont.

Jack Edward Huston, 82, of Huntsville died April 5. He retired from the Marshall Center in 1980 as an electronic technician. He is survived by his wife, Ruth Brown Huston; and one daughter, the Rev. Deacon Lynn Bullard of Huntsville.

Virginia Conley Hackleman, 81, of Union Grove died Feb. 16. She retired from the Marshall Center in 1975 as a procurement clerk typist.

NSSTC hosting new Distinguished Lecturer Series

Features speakers from industry, academia, private research and government agencies

By Rick Smith

The National Space Science and Technology Center in Huntsville kicks off its new Distinguished Lecturer Series Thursday, May 11.

The monthly series, created by NSSTC Executive Director Marty Kress and hosted by the NSSTC and its participating organizations, will feature speakers from industry, academia, private research facilities and government agencies.

The lecture series is open to Marshall and NSSTC employees, scientists and students from the University of Alabama in Huntsville, Alabama A&M University and other affiliated schools, and business and community leaders across the Tennessee Valley.

The series kicks off at 11 a.m. in NSSTC Room 4078. Dr. David J. McComas will discuss the proposed Interstellar Boundary Explorer mission. McComas, the

principal investigator for the mission, is senior executive director of the Space Science and Engineering Division of Southwest Research Institute in San Antonio.

The mission, co-created by researchers at Southwest Research Institute, NASA's Goddard Space Flight Center in Greenbelt, Md., and other partner institutions, could take flight in coming years to study the relationship between the powerful solar winds and the interstellar medium, the gas and dust drifting in open space beyond our solar system.

Dr. Wes Huntress, director of the Geophysical Laboratory at the Carnegie Institute of Washington and former associate administrator of NASA's Office of Space Science and a member of the NASA Advisory Council, will discuss the outlook and direction of future NASA space science endeavors at the series' second lecture June 21.

Future lectures are expected to be held at other NSSTC partner facilities that will accommodate large audiences.

"It's the NSSTC's primary goal to provide matchless scientific achievement in our key research areas," Kress said. Those include space and solar science; atmospheric

science and climatology; advanced optics, instruments and sensors; advanced propulsion; and information technology.

"Dave McComas and Wes Huntress are key players in the execution of NASA's mission, and in the strategic planning process for all these science and technology activities," Kress said. "Inviting these and other leading scientists, business leaders and futurists to Huntsville not only enhances the NSSTC's position as a leading national research facility, but it continues to foster strong, mutually beneficial partnerships between NASA and science technology-driven organizations across industry, academia and government."

Future speakers will address other science and technology issues and NASA missions, lecturing on topics as far-ranging as global weather systems, advanced robotics, intelligent IT networks, unpiloted aerial vehicles, lunar science and new missions to study the sun-Earth environment.

For more information, visit <http://www.nsstc.org> or telephone the NSSTC at 961-7000.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

High Wire Act

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products, and evaluate them for potential use in future hardware needed for deep-space exploration missions.

The research is expected to conclude later this year. Based on the results, simulated space environment testing — such as exposing the wires to vacuum conditions, radiation and extreme temperatures — could continue at Marshall.

Noting that NASA has issued a Centennial Tether Challenge, Grugel hopes the test results will entice industry to partner with NASA to refine wire development for use in space-based tests

in 2007-2008. NASA's Centennial Challenges, open to academia, industry and the public, seek novel solutions to specific NASA mission challenges. The ongoing series of challenges are designed to stimulate innovation and competition in solar system exploration and ongoing NASA mission areas.

For more information about the Centennial Challenges, visit <http://exploration.nasa.gov/centennialchallenge>.

For more information about the Advanced Materials for Exploration Activity, visit <http://ame.msfc.nasa.gov>.

The writer, an ASRI employee, supports the Office of Strategic Analysis and Communications.

Technology

Continued from page 3

Currently, some of the most popular requests at the repository are from Marshall engineers asking for old Saturn V data, drawings and information, as they work toward building a spacecraft to replace the space shuttle, according to a repository staff member.

Bright knowingly nodded his head. "Our goal is to provide exceptional support that allows Marshall to accomplish building the next-generation spacecraft that will carry humans back to the moon and beyond," he said.

The writer, an employee of ASRI, supports the Office of Strategic Analysis and Communications.

Classified Ads

To submit a classified ad to the Marshall Star, go to Inside Marshall, to "Employee Resources," and click on "Employee Ads — Submit Ad." Ads are limited to 15 words, including contact numbers. No sales pitches. Deadline for the next issue is 4:30 p.m. Thursday.

Miscellaneous

Friction-powered rocket w/automatic "launch" drop-down doorway, \$25 in box; tin space toys from 1960s. 303-3702

Baseball bat, Worth Copperhead, 31", 18 oz., never used, \$45. 256-828-1234

Coffee table, \$50. 651-0900

Oak entertainment center, holds 27" TV, \$150. 256-830-1911

HP 720 printer w/new color and B/W ink cartridges plus HP scanner, \$75 for all. 256-783-4216

Sears Craftsman gas-powered lawn vacuum/mulcher, \$85. 683-9364

Assorted small bird accessories including 2 metal birdcage stands. Ralph/534-5653

Jackson vine, all sizes, potted plants, rare tubers also available. 534-7212

Dining table pad, new. 882-1097

Sony stereo w/surround sound, 51CD changer, \$100; golf clubs w/bag, \$100; Nikon 35mm Advantix, \$100. 256-762-1213

Whirlpool gas dryer, \$200. 832-215-1619

Self-propelled Yardman mower, 21", 6.5HP, used 6 times, \$170. 461-9404

Body Solid Roman chair/hyperextension chair, \$90. 353-9891 evenings

Guitars, \$200 and \$100; banjo, \$100. 233-5247

Sanyo television, 19", \$35. 865-567-8862

Epiphone Casino electric guitar w/hardshell case, sunburst finish, \$550. 684-0910

Daniel Moore Alabama football print, "The Winning Connection", signed and numbered, professionally framed, \$225. 423-4217

Reflecting telescope, Starhopper, large 8" diameter, \$250; other accessories available. 665-2732

2003 two-horse Brenderup trailer w/tack compartment, lightweight at 1900 lbs., inertia braking system,

\$6,000. 256-508-7388

Two aluminum pool lounge chairs w/white straps, \$50; trampoline, 14' diameter, \$100. 830-2806

Dining room set w/server, \$300; oak entertainment cabinet, holds 36" TV, \$500; chandelier. 881-2131

Sealy TruForm Visco 9" queen mattress/box spring set, two months old. 881-1061

TroyBuilt Bronco tiller, 16", with 5.5HP B&S engine, \$450. 776-2263

Oak entertainment center w/recessed lights, holds up to 36" TV, \$600. 829-0285

Madison Academy uniform polos, sweaters, vests, pants, shorts, etc., large and X-large. 722-5282

SD 512Mb card, \$18; CF 256Mb card, \$11, new memory stick 1GB, \$56; new printer, \$29. 655-1986

Bruce solid oak, 3/4" nail-down hardwood flooring, butterscotch, approximately 120 sq. ft., \$240. 895-9589

Vehicles

2000 Nissan Frontier Crew Cab, 4 door, automatic, CD/cassette, 102K miles, silver, \$9,200. 880-9025

1998 Chevrolet Cavalier, 4 door, 4 cylinder, 2.4 liter, power windows, a/c, automatic, compact disc/radio, \$1,950. 603-3558

2002 Toyota Tacoma PreRunner, silver, V6, 4 door, double cab, 85K miles, original owner, \$16,000. 464-9648

1987 Ford Thunderbird, 55K miles, maroon, automatic, exterior and interior in good condition, \$1,300. 694-0383

2004 GMC Denali, black, leather seats, heated, drop-down DVD player, roomy, price negotiable. 256-566-3598

1992 KX250 motorcycle, many upgrades, Excel rims, \$850. 527-8116

1999 Ford 150 XL pickup, standard bed, \$3,750. 656-2951

Viking pop-up camper w/cover, 23.5', air conditioned, furnace, awning, extra accessories, clean, \$2,850. 722-8116

1991 Nissan Stanza, 5 speed, 155K miles, PW/PL, a/c, dark red, \$1,490. 256-426-2516

1995 Cadillac Concours Deville, black, loaded, \$1,750; 1994 Mercury Cougar, 102K miles, \$2,300. 256-520-2802

2002 Ford F-150 Lariat, V8/5.4L, white, 4WD, tow, \$14,000. 931-425-0896 evenings

2000 Mercury Grand Marquis LS, all power, leather, extras, 51K miles, silver, \$7,995. 931-728-3397

2002 Yamaha YZF600R, 7.6K miles, blue/white, includes helmet, jacket, gloves, \$4,500. 256-351-9483

2003 Lincoln LS, V6, black w/black leather, automatic, 4 door, 50K miles, \$19,000. 256-694-1217

1995 Saturn SW2, 227K miles, new tires, \$2,000. 256-652-5274

2003 Yamaha 650 V-Star Silverado motorcycle, 3K miles, garaged, \$4,650. 256-350-2782/Decatur

2001 Toyota Tacoma Xtracab Prerunner, red, 74K miles, warranty, V6/AT, tow package, toolbox, \$15,500. 683-9016

2005 Nissan Frontier, extended cab, loaded, garaged, under warranty, \$16,900. 837-1774

2001 Ford F-150 XLT Supercab, black, 4 door, 96K miles, auto, loaded, new tires, \$9,500. 684-3824

1997 Xpress Bass boat, 18', w/115HP Yamaha, \$7,200. 256-653-7308

2005 Titan LE crew cab, 4x4, smoke, gray leather, 14.2K miles, \$27,500. 603-4460

2004 Sebring convertible, gold, under warranty, \$15,000 negotiable. 652-5177

2002 Toyota Tacoma PreRunner, silver, V6, 4 door, double cab, 85K miles, original owner, \$16,000. 464-9648

1999 Dakota Club Cab, V8, 4WD, sport package, loaded, \$8,700. 880-6146

2006 VStar Classic, blue on black, three helmets, riding jacket, take up payments. 679-0694

1994 Mitsubishi 2.0 DOHC engine, 80K miles, all electronics, \$250. 655-2753

2000 Allegro motor home, 2 slides, 32', 14K miles, rear camera, 3 TVs, satellite dish. 256-461-8271

1998 Chevy S-10 extended cab pickup, gray, 103K miles, V6/4.3L, 2WD, automatic, a/c, all power, \$5,000. 684-1509

Wanted

2004 Toyota Sienna. 539-4485

NEC advanced personal computer. 881-6595

To buy a like new over-the-stove microwave, 30 inch. 256-498-2028

Fort-style wooden jungle gym children's play set, will disassemble & remove from your site. 520-1063/Lynn

Browning high-power pistol in good used condition, any caliber considered. 683-9462

Lost

Sixty dollars (\$60); \$20 returned to Bldg. 4203 cafeteria on 5/2/06 at 11:30 a.m. 461-8437

Marshall Center sponsors Hispanic Youth Conference on May 5



Audrey Robinson, left, director of the Office of Diversity and Equal Opportunity, welcomes high school students and teachers to the Hispanic Youth Conference on May 5 at the Huntsville Marriott Hotel. The conference, co-sponsored annually by the Marshall Center, the Hispanic Professional Women Association and Lawson State Community College in Birmingham, drew more than 100 students and 14 teachers to Huntsville this year. Organizers designed the conference to motivate Hispanic high school students to stay in school and pursue possible careers in science, technology, engineering and math.

Emmett Given/NSFC

Howard SooHoo, right, test engineer for the Test Integration Office in Marshall Center's Test Laboratory, part of the Engineering Directorate, and Chris Conn, electronics technician with the Exploration Launch Office, use liquid nitrogen to demonstrate basic principles of cryogenics — deep-freeze technology — to student participants at the Hispanic Youth Conference May 5. During the conference, students visited with Marshall scientists and engineers, and toured test areas, the Payload Operations Center and other key facilities. The Test Laboratory at Marshall manages the functions, resources and facilities necessary for simulation of aerospace environments and flight-like conditions, and could play a vital role in qualifying and testing flight hardware for future NASA exploration missions.



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